fluorescence used in the fluorescent lamp. In the lamp tube in which they are generated they fall upon the phosphor with which the tube is lined, their wave lengths are increased and they emerge as visible light.

Fluorescence by itself cannot make infra-red radiation waves shorter; it can only make them longer. However, there is an indirect way in which they can make visible light come from a phosphor.

Some phosphors, he explained, show phosphorescence; they continue to glow for a time after the original radiation has been removed. If, while this glow remains, the phosphor is exposed to infra-red, the brightness may be slightly increased. After that it quickly fades out. Dr. Fonda found that the effect, previously known to other scientists, occurs with zinc sulfide, a common phosphor, provided it contains a fraction of a per cent of lead.

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ZOOLOGY

Japan's Whaling Industry

The war with its sinking of Japan's whaling vessels wiped out whaling as an industry, and created a serious food shortage.

➤ JAPAN'S whaling industry, a highly important contributor to the island empire's food and commercial economies, was practically wiped out by the war. Figures from official Japanese sources show that the annual catch by Japanese whalers collapsed from a prewar figure of nearly 13,000 whales to only 531 in 1945.

Before the war, Japan had a fleet of six so-called factory ships, each capable of hauling a whole dead whale onto its deck and processing it for oil. Each of these factory ships was attended by a flotilla of small tug-like killer boats that did the actual hunting and harpooning. With this fleet, Japan stood about even with Germany but was considerably outclassed by the whaling fleets of Norway and Britain.

In addition to the factory ships, which sought whales mainly in Antarctic waters, Japan had on the home mainland several shore stations for rendering whale oil and processing whale meat, and one such station in the Bonin islands, in the Kuriles, and on the coast of Korea. Whale meat is unappetizing to Europeans and Americans, but the Japs seem to like it.

Japanese whalers in distant waters seldom brought their whale oil home. They sold it on the homeward voyage, used the proceeds to buy petroleum, loaded that into their tanks to take back and add to the war-lords' stockpile of military essentials.

After Pearl Harbor the factory ships of course could not visit the far southern whaling grounds any longer. This was a break for the whales, because Japan was the one power that refused to ratify or abide by the international agreement of prewar days for whale conservation, which even the Nazis observed—at least when people were looking. The ships, apparently converted for use as tankers, were found and sunk by Allied submarines and airplanes. It is believed that none of the six is left afloat today. The same fate overtook many of the killer boats, which were used as patrol craft and for other auxiliary purposes. Japan's whaling fleet is as thoroughly gone as her naval fleet.

Results show up strikingly in recent whale-catch figures. During the five-year period 1936-41, the number of whales of all species killed in Antarctic waters by Japanese whalers was 32,017. Japanese ships also sought whales in the Arctic during the two years just before the war; total catch for 1940 and 1941 was 1,252. For the five prewar years, the catch in home waters totaled 11,052 whales; the number had climbed from 1,217 in 1936 to 2,349 in 1941.

Then came the war, and with it the end of all factory-ship operations. Only the shore-based whaling in home waters continued. Before Pearl Harbor this apparently began to dwindle, for the 1942 catch was 1,148. In 1943 it had risen again to 1,491, and in 1944 the figure had been boosted to 2,169 dead whales.

Then came 1945, bringing total defeat and ruin: the count of whales taken for what had been the Japanese Empire was a mere 531, all in home waters.

It may prove desirable to let the Japanese catch whales again in their home waters, if only to replenish their bare national cupboard. If that is done, however, it is to be presumed that Gen. MacArthur will see to it that this time they observe international rules for whale conservation.

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TEXTILES

Jute Made into Wool Substitute in India

➤ SCIENTISTS in India, who have been searching for chemical processes of producing rayon, paper, and cheap woolen fabrics from jute, have developed a new material from jute fiber similar to coarse wool.

Prof. S. C. Sirkar and N. N. Saha, of the University of Calcutta, announce in the British scientific journal *Nature,* (June 22), that the new material, a hydrated cellulose, is superior to any previously developed.

During the war India's outlets for marketing its annual five-billion-pound jute crop, 98% of the world's supply, were so reduced that the India Central Jute Committee financed research to give jute new jobs to do at home.

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AERONAUTICS

New Regulations Mean Fewer Fires in Flight

➤ FIRES IN flight will be few indeed under new government regulations promised by the Civil Aeronautics Board. The orders, intended to eliminate practically all fire hazards in airplanes, will include requirements for additional fire-prevention apparatus, the use of non-combustible materials, and safeguards in electrical installations.

Easy access from the cabin to baggage and other compartments in the plane is regarded as essential by the CAB, so that a fire can be easily reached with fire extinguishers. Fire-detecting equipment in cargo and other compartments is another essential together with automatic extinguishers. Better extinguishers are desirable, particularly those using methyl bromide and carbon tetrachloride. These are better than carbon dioxide extinguishers, the CAB says.

The use of paper lunch and lavatory accessories constitutes a fire hazard, according to the Board. Aircraft designers will be required to place greater emphasis on the use of non-combustible materials in cabin lining, sound-proofing and waste containers.

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